

# State of South Carolina's Coastal Resources



## Shrimp Update

### Introduction

The most valuable fishery in the southeastern United States is the harvest of penaeid shrimps. In South Carolina and Georgia, this fishery is comprised primarily of two species, the white (*Litopenaeus setiferus*) and brown (*Farfantepenaeus aztecus*) shrimps, with white shrimp dominating catches. Pink shrimp (*F. duorarum*) also occur, but they are a minor component of commercial catches in SC. This report provides an update on the status of penaeid shrimp in South Carolina during 2004. A previous status report for 2003 is available at <http://www.dnr.state.sc.us/marine/publications.html> under "State of Resources".

### Commercial Fishery Harvest

The commercial fishery for penaeid shrimp landed approximately 3.6 million pounds of shrimp (heads off, all species), with an approximate value to the harvesters of \$9 million in 2004 (Figure 1). The weight of commercial shrimp landings was slightly greater than the long-term average; however the dollar value of this harvest was approximately \$3 million below the long-term average, due to weak prices. The low price for shrimp is symptomatic of increased imports. White shrimp landings were higher in 2004 than in previous years, whereas brown shrimp landings were 48% lower than the 2003 landings.

The number of trawling licenses sold in South Carolina during the 1990s was fairly stable, fluctuating between 800 and 1000 licenses each season. Since 2000, both the number of resident and of non-resident licenses have been decreasing, with the exception of non-resident licenses in 2002 (Table 1). The lower number of non-resident licenses sold that year was probably related to rising operating costs and weak unit prices for shrimp.

Table 1. Number of trawling licenses sold in SC.

Year	Resident	Non-resident	Total
2000	507	408	915
2001	418	269	687
2002	403	314	717
2003	372	199	571
2004	365	190	555

In September 2003, a mandatory trip ticket system was put into place to collect information on the area fished, amount of fishing effort, and pounds landed, by grade. Preliminary analysis of the data shows a difference between the catch per unit effort during the fall of 2003 versus 2004. Although only small differences were seen in the total landings between years, catch rates were higher in 2004, due to a substantial decrease in the number of

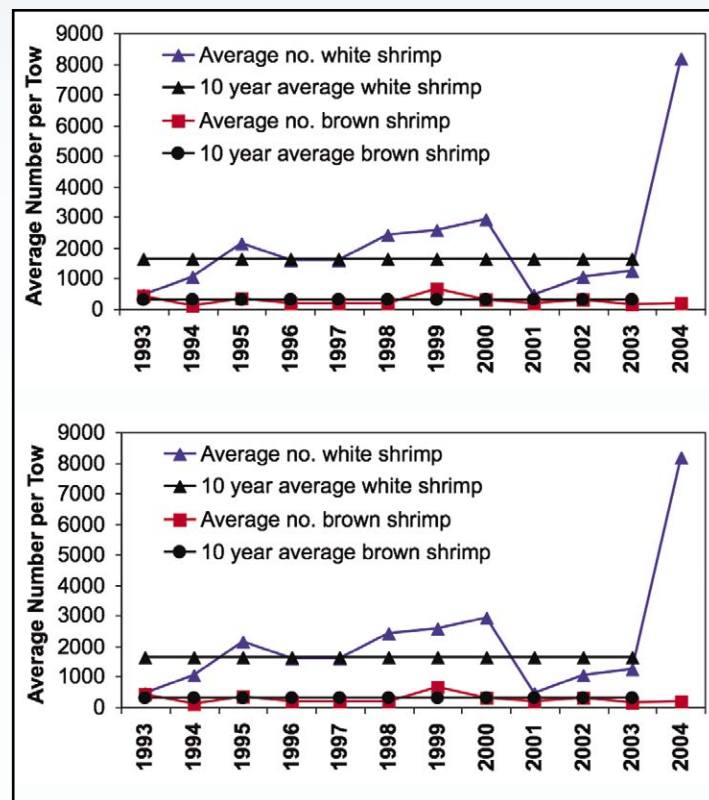


Figure 1. Wild caught shrimp landings and value.

hours spent trawling. These preliminary results may indicate that shrimpers are becoming more efficient, only fishing when conditions allow them to maximize their catch.

### Recreational Harvest

The recreational harvest of penaeid shrimp is concentrated mostly during the fall shrimp baiting season, although some shrimp are harvested throughout the year without bait using cast nets, lift nets, and seines. From 1999 to the present, the number of shrimp baiting permits sold has been declining. The sale of 10,609 permits in 2004 was the lowest since 1990. Effort declined in 2004 as well, with just under 40,000 trips reported by recreational baiters. The majority of these trips were made in the Beaufort and Bulls Bay areas. The estimated harvest from the 2004 shrimp baiting season was just over 664,000 pounds (heads-off), accounting for 22% percent of the total fall white shrimp landings. This estimated catch was the second lowest recorded in South Carolina since the fishery began and is probably related to the decreased effort, combined with the availability of relatively low priced shrimp and above average rainfall and winds due to tropical storms during the beginning of the season.

## Fishery Independent Sampling

Data from trawl sampling of juvenile brown shrimp living in tidal creek nursery areas near Charleston show slightly below average catches since 2001 (Figure 2). In 2005, unusually cool temperatures in the spring probably delayed recruitment and growth of postlarval shrimp and possibly resulted in direct mortality, as well. Because white shrimp were extremely abundant in 2004, at least in tidal creeks near Charleston, their overall growth was very slow. Predation by fish and crabs could have caused greater mortality than usual. The abundance of small spotted sea trout, a known predator on shrimp, was high in 2004 and may have contributed substantially to shrimp mortality.

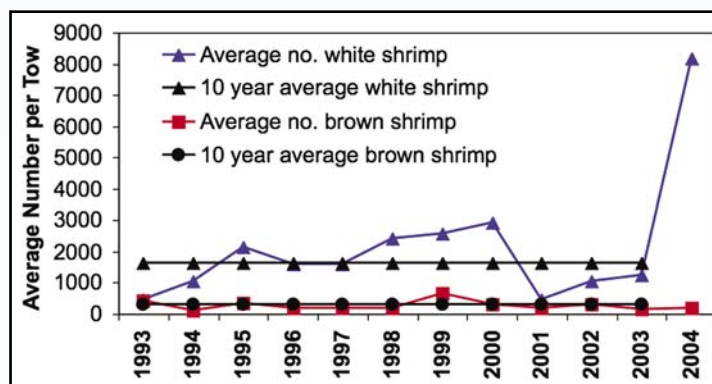


Figure 2. Brown and white shrimp caught by trawl in tidal creeks near Charleston, SC.

In contrast to creek collections, samples from 20 ft. trawl collections in the estuaries and sounds for summer and fall 2004 contained below average numbers of white shrimp (Figure 3). This was surprising, given the high numbers of small shrimp observed in creek nursery grounds during the spring. Intense competition for food and space, increased predation, and numerous tropical storms all may have had negative impacts on the population. Samples of white shrimp taken in tidal creeks in summer 2005 appear to be similar to those from 2004, with above average numbers and relatively small size.

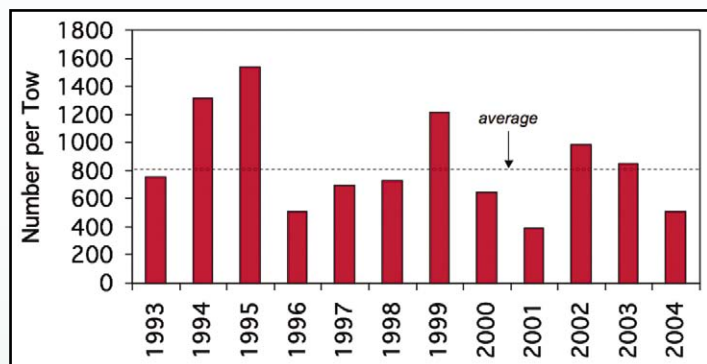


Figure 3. Number per tow of white shrimp caught in fishery independent surveys in fall.

Black gill disease continues to be prevalent in the white shrimp stock during the fall season. The disease was more severe in Georgia than in South Carolina during 2004, but there is still much uncertainty about how the disease affects shrimp popula-

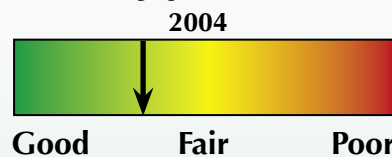
tions. Efforts are underway to better document potential effects in shrimp and shrimp fisheries.


The ultimate goal of fisheries managers is to understand the causes of fluctuations in stocks and also to predict future abundance. The SCDNR has begun to explore application of advanced techniques, similar to those used to forecast the weather, in order to understand the dynamics of shrimp catches and predict the commercial harvest months in advance. While this effort is just beginning, staff are encouraged by the preliminary results. In 2004, the models predicted the fall harvest within 3% of the actual value. The prediction for 2005 indicates that it will be a below average year, but only slightly below the 30-year average. The importance of this approach is that it allows the SCDNR to predict the harvest 6-9 months into the future in near real time.

## Overall Condition of the Stock and Fishery

White shrimp stocks in 2004 were impacted by weather conditions. An adequate number of spawners survived the winter, in spite of cold water temperatures observed in January 2004. Rainfall was adequate during the spring and early summer of 2004, which would normally increase fall shrimp catches in general. Conditions in the estuaries appeared to be good for growth and survival of young white shrimp in nursery areas. However, the end result was a below average fall crop, undoubtedly influenced by tropical systems that caused premature movement of shrimp from estuaries. Brown shrimp stocks were below average, but not at the level of the El-Nino years of 1997 and 1998, when cool wet springs delayed growth and possibly caused some mortality of young brown shrimp.

Inflation and declining shrimp prices have resulted in a general decline in the economic condition of the trawl fishery over the last ten years, with white shrimp catches being below average for both commercial trawlers and recreational shrimp baiters. Numerous tropical storms caused shrimp to move prematurely from inshore areas, and continued low prices limited trawling effort. An increase in foreign shrimp imports has also affected landings in South Carolina. The number of participants in the commercial fishery is declining, although shrimp is still the most important seafood harvest in the state. Surprisingly, the tremendous growth in the shrimp baiting fishery since 1985 has not resulted in a major impact upon the trawler fishery's total harvest, although some local impacts have been noted. Serious concerns about sea turtle mortalities caused by the trawler fishery have resulted in the mandatory use of Turtle Excluder Devices (TEDs) in shrimp nets. With the continued fishery independent monitoring of estuarine and nearshore populations of these shrimp species, more accurate models are being developed to better predict future landings of this important crop.





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